Risk Assessment and Management in Commercial Transactions – Observations on the Interface between the Psychology and Documentation of Risk in business

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In the construction and projects sectors, without doubt "*risk allocation*" is the most popular topic – or class of topics. But what is "*risk"* in a commercial transaction?

In this paper, I outline the key concepts of *"risk*" and how it is perceived by both individuals and organizations. And once perceived, how there are different methods of assessment, measurement, and prediction.

Finally, I make some observations, from the perspective of a commercial lawyer, on the issues that both client and lawyer need to address when seeking to document a particular risk allocation or outcome.

"You're never going to get what you want out of life without taking some risks."
Lee Iacocca (Chrysler).

The Role and Nature of Corporate Risk

The current business thesis is that the process of enterprise includes disrupting, even dismantling, the old as much as it is building the new and that change is the only constant and that change requires taking risks.
Hence, successful modern management is a function of successful risk taking (*see D. Kehrer, Doing Business Boldly __ Art of Taking Intelligent Risks (1989), Times Books).*
It is perhaps more consistent with the American business psyche – that every deal must be won, and that business is inherently an adversarial process – that *Kehrer* puts his proposition in the affirmative – *to be successful you must take a risk.*
However, as will be seen below, it is much more the ability properly to perceive the relevant risks and meet them in an economic and timely fashion that is likely to be the hallmark of successful business in the next decade.
The construction industry is one business where there will always be discussion on risks, through the very nature of its processes. Commonly encountered risks include: ground conditions, weather, industrial issues and the price of materials and labour. Yet the general principles of risk perception and analysis apply to every facet of management in all business sectors.
This article seeks to put the broader perspective regarding risk in the construction industry; its development from individual perception to group analysis; through corporate attitudes and into the formalities of doing business, including documents such as standard construction contracts.

The article's general thesis could be summarized as follows: *Whilst lessons can be learned from the construction industry, in all business, the successful management of risk must involve a more sophisticated analysis of risks and recognition that risk management is a complex matrix of individual and group perceptions matched to economic and commercial factors in the marketplace.*

Why Risk?

Do risks produce profits or success? If it is accepted that the former does not necessarily mean the latter then the answer is *no*, but for different reasons.

Frank A. Felice in his text, The Principles of Economics, says:
"Profits are due not to risk, but to superior skill in taking risks. They are not subtracted from the gains of labour but are earned, in the same sense in which the wages of skilled labour are earned."

However, H. J. Boyadjian and J.F. Warren, Risks – Reading the Corporate Signals, put it better this way:
"It is usually stated as a dogma that risk and reward are inextricably interlinked and that the marketplace rewards risk takers in proposition to the risks they assume. That dogma is almost certainly wrong. Risky investments may indeed carry a 'premium' reward but the existence of a precise relationship between the two cannot be demonstrated or verified as there is no objective and generally accepted method of evaluating risk. The measurement of reward is relatively uncomplicated. We know what returns have been generated on historical investments and we can often make a shrewd guess what future returns are likely to be. Bankers build their margins into the structure of their deals and so know precisely how lucrative any particular deal is likely to be. But we cannot measure risk in the same way."

Do You Have a Choice?

There is no doubt that risks are the "change agents" that prevent enterprise from becoming static or alternatively drive commercial enterprise into new fields. There is strong criticism for a passive approach to risk, which is not being advocated here, although perhaps the better approach is constructive and anticipatory rather than just plain "active" as certain writers in the field believe.
The criticism of business stagnancy is unanimous, but the reasons for it and the manner in which it may be overcome are still subject to a variety of theories.
The famous American businessman and politician (he once ran for party nomination against Richard Nixon) Adlai Stevenson's observations (nay criticism) of the "swollen pool" of MBAs being produced by universities in the 1970s was that *"MBA graduates know how to do things right but not the right things to do"* is consistent with Kehrer's criticism that *"today every business decision comes wrapped in statistics"* (Doing Business Boldly (above), p.55).
As he notes, we look to statistics to form opinions, divine trends and make choices about risks. With access to these deep and fertile data mines, managers become *"kids in a candy store*". When problems arise, they throw data at them, only occasionally inquiring whether the information actually nets any tangible progress.
Indeed, Kehrer suggests that statistics have become a new type of corporate currency for purchasing peace of mind in decision-making.

Management consultant Peter Ducker's observations that:
"Risk in not about statistical probabilities or avoidance. It is about breaking patterns – daring to do something that hasn't been done before, when businesses have statistics and other information to 'measure' their risks and advise them on decisions, they expect the final results to fit their information. When it doesn't, they wonder why."

The difficulty with risk is that it is generally imposed upon a corporation or there is a real potential for that to happen. Accordingly, the approach in the 1960s and 1970s to risk management by means of avoidance – the passive approach – has been attributable as a significant factor in the many corporate failures in the late 1980s and now, again, in recent years – witness especially the complete failure of General Motors to "risk" innovation in their products and to seek to mask that non-achievement by using cheap (and internal) financing techniques to keep their out-of-date products being sold.
The current catch cry is - *what methods can help enterprise more effectively take constructive, dynamic risks? How can managers become better risk takers? What should companies do to increase their risk taking?*
You may not be willing to accept such an active role. Nevertheless, the manner in which risk is perceived at an individual level, and the manner in which risk is assessed and acted upon at group and corporate levels, are factors which, especially in the construction and major projects industry, have a significant influence on corporate health.

The Psychology of Risk – The Individual

Who, in your corporate decision-making chain, is a risk taker? Who is a risk avoider? Psychologists have pointed out that risk takers often show a strong ability to deal with complex situations. They consistently excel in tests of abstract reasoning and often have a high level of what psychologists' call "need satisfaction".
Risk, as a general criterion, has a number of subsets – the risk of gain and the risk of avoiding a loss are the two most important. And it is the individual's perception of each, and ultimately perhaps a group within a corporation, which can be the most relevant factor in properly meeting a particular risk scenario.
It is essentially this - what tilts the balance towards safety or risk is *not* the content of the choice but the way it is framed. *Perception* is crucial to the risk-taking mind-set.

"You and I will flip a coin. If it's heads you get $1,000. Tails, you get nothing. Now suppose you also have the option of skipping the loss in return for a fixed amount of money. What is the least amount you will settle for? You have a fifty-fifty chance in the coin toss. Do you give it up for $500? Studies on this question show that the average person will take about $350 in sure money.
But turn the situation around a little. Suppose you are given $1,000 to begin with. Now you have the $1,000 and must flip a coin to determine if you keep it all or must give it all back. How much of your $1,000 will you now give up to avoid tossing the coin? Here again there is a fifty-fifty chance of keeping or losing the $1,000, so do you give up $500 to be assured of keeping $500? Since most people were willing to take $350 in the first case, they should be willing to give p $650 in this one. But research doesn't show this result. Most people will give back no more than $350.

In reality, both situations are the same - you have a fifty-fifty chance of gaining $1,000. Because of the way the first choice is *presented,* however, it appears to be a choice between two gains.
And, according to the psychologists, *when only a gain is involved in two risk decisions, people tend to be more conservative.*
The second case was constructed to make the choice appear to be one between two losses. And, when *faced with a choice between two losses, most people will take a greater risk* - in this case, by refusing to give up more of their money in return for keeping a sure amount.
(In the example, most people want to keep $650 of what they had but would take $350 in the first case.) (*Doing Business Boldly*, p.80)

The Individual's Response to and Perception of Risk

Although the risk to a particular business enterprise or project arising from market conditions is presented as a risk to the corporation, studies have shown that because the corporate decision-making process involves individuals their perception of the risk, personally, is a dominant influence in a corporation's response.

Moreover, if it be thought that the grouping or teaming of executives for the purpose of "balancing" risk attitudes to a particular scenario is preferable, Joseph P. Forgas in his text, Interpersonal Behavior – The Psychology of Social Interaction proposes otherwise:

"In a highly cohesive group, 'group think' may take over, resulting in the biased evaluation of the available evidence, Groups are frequently used as decision making instruments in our society. The more important a decision, the more likely it is *that it would be entrusted to a group rather than a single individual. Juries, interviewing panels, cabinets, committees and boards of companies all operate on the assumption that groups are better at decision making than individuals. The widespread use of groups as decision making instruments probably has a lot to do with the democratic ideology of western societies. Groups are not only more representative, but are also believed to be less likely to make extreme or unreasonable decisions. . . . The assumption that groups are less extreme than individuals is, however, not always justified. Considerable evidence suggests that in some circumstances at least, groups may be more extreme, and take greater risks than their individual members would. Several studies [have] found that in decisions about acceptable levels of risk, groups tend to opt for riskier alternatives than individuals: they generate a so-called 'risky shift'. . . . Why then this group-induced shift towards risk? There may be several factors at play here. One possible explanation is diffusion of responsibility where a decision occurs in a group. Since no single individual has to carry the whole responsibility for the risky decision, everybody feels inclined to be a little more daring. Another possible explanation has to do with leadership. It may be that most ' risky' or extreme individual group members also turn out to be the most persuasive leaders, so that the group will come to accept their extreme positions. Some research at least suggests that people who have more extreme positions also have more confidence in their judgments. Yet another explanation is that in a society such as ours in which risk taking is generally seen as a positive value, members of a group may try to outdo each other in riskiness, something which would not occur if they were making the decisions as individuals."* (Page 302,)

Just Because You Have Been Wrong Before, Does Not Mean the Odds Are Now Better That You Will be Right.

Turning to the importance of individual perception of risk and, in fact, its characterization and the manner in which risk perception can be altered to a party's advantage, it is worth mentioning what *Kehrer* refers to as the "*probability trip wire*"—the reliance on statistics and probabilities.
Inevitably most corporate decisions which involve a perceived risk include someone being asked to answer the question "*what are the chance of it occurring?*".
But what does the answer "50-50" actually mean? How many believe, for example, that if the ball in a roulette wheel has just landed on black four times in a row, the odds have now improved that the next spin will turn up red? It is a common but infamous scientific fallacy: the odds are the same as they were at the first spin, 50-50 (see Doing Business Boldly, p, 98).
Moreover, the average of a regularly occurring event usually nears 50 per cent only after a large number of events have occurred. It is incorrect to conclude that chance is self correcting - that is, a deviation in one direction promotes a deviation in the other to compensate for it.
Accordingly, a number of theories have been advanced as to why science and analysis have a limited role in risk and the decision-making process in day-to-day commercial life.
In a paper by J. D. Graham, H. Raiffa and J. W. Baupel, "Science and Analysis", the authors, with respect, correctly put into perspective the role of science and analysis in the risk decision-making process.

"The role of science and analysis in decision making is (and should be) limited for the following reasons.

***First**, decisions about social problems - such as those involving risks - invariably entail some conflicts of interests among people. It is the rare case when a decision can be simultaneously the best for all parties concerned. Even in those rare cases when all people are made better off by a decision, some win more while others win less. Although analysis can help identify the total benefits and costs of various policy alternatives, it cannot objectively resolve conflicts of interests. In a democracy, these distributional issues should be sorted out by political process*.

***Second**, some policy problems that in principle are analyzable - that is, would respond to an intellectual resolution if they could be pursued long and painstakingly enough - are not, in fact, analyzable because they run beyond anyone's cognitive capacities or beyond society's store of information, Again, these issues require political as well as intellectual contributions to their solutions.*

***Third**, analysis can be done and is done by persons other than risk analysts. For example, public servants and business managers would, on some kinds of issues, be better off to conduct their own informal analysis, because they can draw upon a fund of practical experience and can better cope with and respond to the realities of a particular organization.*

***Fourth**, professional risk analysis, even when it is more competent than any other method of assessment or evaluation, is fallible and inconclusive. How far to trust it, when and when not to trust*

it, are questions that should be decided by accountable authorities. For example, in the public sector the use of risk analysis should ultimately be subject to the control of the electorate and political officials. In some cases Congress decides (for arguably good or bad reasons) that certain elements of an academically respectable risk analysis should not be considered by public decision makers when considering risk-coping strategies.

Finally, professional risk analysis is expensive and time-consuming. *It is simply impossible to subject every important aspect of a policy decision and professional analysis. There are not enough professionals to go around, nor would there be if their numbers were many times multiplied. And many issues are not worth the cost of analysis, or the issues have to be decided before an analysis can be completed."* (Covello (Paper 21), Risk Evaluation and Management (1986), p.503-504).

The Mind-set

Psychologists claim that risk takers think differently than risk avoiders.
Risk takers see relationships between events and trends in enterprises, and their nuances, that other people have not yet seen or will never see.
Risk takers perceive risk differently than risk avoiders. What the risk avoider may consider dangerous the risk taker may view primarily as an opportunity. But an opportunity, of course, for one party may be a risk for another.
For example, the rise and fall of both Michael Milken and his investment banking firm Drexel Burnham Lambert (DLB) is so well documented it does not need repeating. There can be no denying that Milken's junk bonds radically changed the way American industry financed itself - and perhaps unfortunately, certain Australian industries. Milken's theory was that while second-tier corporations and, indeed, often third-tier companies provided a "basket" of investments with bigger risks, as a net result the investments prospects were much higher. He cited, as an example, General Motors (GM) in the early 1980s when it was cash-rich and the earnings champion of the auto industry, Milken's theory was that GM did nothing to change whilst Ford, being concerned about its position from both above and below began to experiment and take risks, By 1986 Ford's earnings had passed GM's although on a smaller turnover.
After the demise of DLB, it took only another business and generation cycle for the same analysis to not only be seen to be true but, this time, to literally bring the GM house down.
Risk takers see analogies and similarities better than many other people. They approach risks from many angles, and it gives them more confidence, better odds and greater creativity. They "transform" one way of thinking into another, thus supporting their own risk urges.
As Kehrer, (p. 118), notes, risk avoiders tend to think and see things in one light only. Problems have one solution - often "*the way it's always been done".*

Individual Desires (or Risk) Rather than Perception

A consistent result from psychometric studies of expressed preferences, is that people tend to view current risk levels as unacceptably high for most activities.
The Psychometric Study of Risk Perception P. Slovic, B. Fischhoff and S. Lichtenstein (Paper 1), Risk Evaluation and Management (above):

"In industrialized societies, the question 'How safe is safe enough' has emerged as a major policy issue of the 1980s. The frequent discovery of new hazards and the widespread publicity they receive is causing more and more individuals to see themselves as the victims, rather than as the beneficiaries, of technology. These fears and the opposition to technology that they produce have perplexed industrialists and regulators and led many observers to argue that the public's apparent pursuit of a 'zero-risk society' threatens the nation's political and economic stability."

The gap between perceived and desired risk levels, suggests that people are not satisfied with the way that market and other regulatory mechanisms balance risk and benefits. Across the domains of hazards - be they personal or corporate - there seems to be little systematic relationship between perceived existing risks and benefits. However, studies of expressed preference have shown that people are, in certain circumstances, willing to tolerate higher risk levels from activities that are seen as highly beneficial. The factors which motivate that willingness include familiarity, control, catastrophic potential, equity, and level of knowledge. Perhaps the issue of perception is best illustrated, in terms of general social issues, by Slovic et al.'s (above) perceptions, Table A below.

Risk may be addressed by an approach either directly through the development of quantitative measure of the likelihood of possible decision outcomes or indirectly, for example, through the use of sensitivity analysis to determine the range of possible outcomes.

All decision-making approaches are based on the concept of "divide and conquer". This principle means effectively breaking up the whole into its parts, identifying the critical components of the problem and analyzing, where possible each separately.
Cost benefit theory (CBT) emerged from the application of economic theory, originally in the late 19th century to evaluate proposals for the construction of wastewater disposal systems.

The first recorded paper was written by French economist, Jules DuPont, who wrote in 1844, On the Measure of Utility of Public Works. Most authors of *cost-benefit* literature are economists.

The basic premise of CBT is that alternatives should be selected according to a systematic comparison of the advantages (benefits) and disadvantages (cost) that result from the estimated consequences of the choice.

The theory does not involve the concept of a social decision-maker with special responsibility for the decision. Define the perspective for establishing ultimate consequence, and individuals are assumed to be the appropriate judges for valuing consequences.

More specifically, CBT identifies a "best" alternative in terms of an "efficiency criterion" that specifies both how advantages and disadvantages to individuals should be measured and how they should be aggregated to obtain an overall measure of social good.

Thus, CBT is concerned with the maximization of the aggregate value of goods and services consumed by individuals. Accordingly, CBT considers only total social welfare, it is insensitive to distribution of that welfare across people or groups within society.

Table A: Ordering of Perceived Risk for 30 Activities and Technologies *┼				
	League of Women Voters	College Students	Active Club Members	Experts
Nuclear power	1	1	8	20
Motor vehicles	2	5	3	1
Handguns	3	2	1	4
Smoking	4	3	4	2
Motorcycles	5	6	2	6
Alcoholic beverages	6	7	5	3
General (private) aviation	7	15	11	12
Police work	8	8	7	17
Pesticides	9	4	15	8
Surgery	10	11	9	5
Fire fighting	11	10	6	18
Large construction	12	14	13	13
Hunting	13	18	10	23
Spray cans	14	13	23	26
Mountain climbing	15	22	12	29
Bicycles	16	24	14	15
Commercial aviation	17	16	18	16
Electric power (non-nuclear)	18	19	19	9
Swimming	19	30	17	10
Contraceptives	20	9	22	11
Skiing	21	25	16	30
X- rays	22	17	24	7
High school and college football	23	26	21	27
Railroads	24	23	20	19
Food preservatives	25	12	28	14
Food colouring	26	20	30	21
Power mowers	27	28	25	28
Prescription antibiotics	28	21	26	24
Home appliances	29	27	27	22
Vaccinations	30	29	29	25

The ordering is based on the geometric mean risk ratings within each group. Rank 1 represents the *most* risky activity or technology.

┼ Source: Slovic, Fischhoff, and Lichtenstein (1981).

Decision theory (DT) is a theory of how individuals should make decisions in the face of uncertainty. The origins of DT can be traced to the 18th century mathematician, Bernoulli, who held that choice logically depends on the probabilities of the various consequences of a decision and the utility (worth) of those consequences to the decision-maker. Modern DT can be expressed as subjective expected utility - the sum of the utilities and alternative outcomes weighed by their subjective probability of occurrence. The key to DT is the construction of the "decision set" - specifying the available alternative actions, defining a set of variables, the outcome vector (on which the outcome will be judged), assigning probabilities on the outcome vector given each alternative and finally establishing a utility function of the outcome vector given each alternative and finally establishing a utility function on the outcome vector.

Social Welfare Theory (SWT) takes the perspective that the appropriate criterion for social decisions is not the preference of some single decision-maker, but rather a rational synthesis of the preferences of all those individuals who will be affected by the decision. The theory thus concerned with finding decision rules or procedures by which preferences specified by individuals may be incorporated into the decision process. The differences between the decision-making theories are illustrated in Marketer's Table B (see below).

Rarely is a significant decision-making process solely based on one of the above theories, as political and social forces make it necessary to at least consider (if only to attribute little weight) both social and welfare issues.

A good illustration of a decision-making process using a combined set of criteria was the selection of the channel tunnel between England and France. Although the analyses undertaken to identify the most appropriate from of channel crossing comprised a very extensive report (ultimately presented to the full British Parliament), the key criteria are summarized in a number of Tables presented by J, C. Chicken and M. R. Hayns, in, The Risk Ranking Technique in Decision Making (see pp. 183-186).

Table B: A Comparison of Decision-making Theories			
	CBT	**DT**	**SWT**
Intellectual roots	Engineering economies	Engineering, psychology, management science, economics	Welfare economics
Conceptual basis	Economic efficiency	Axioms of individual choice	Axioms of social choice
Decision criterion	Comparison of aggregate value of estimated consequences of alternative actions	Determination of logical implications of alternatives, information and preferences of decision-maker	Derivation of group decision from acceptable mechanisms for incorporating individual preferences
Perspective on value	Total monetary equivalent as determined by economic factors in free market	Responsibility of decision-maker, objective is consistency	Social preference derived from "equitable" synthesis of preferences of impacted parties
View of uncertainty	Objective characterization of environment	Subjective state of individual	Product of individual coping with erratic environment

Assessment of the Efficacy of Ranking **Table C: Summary of Main Channel Crossing Technical Factors of Interest**		
PROPOSAL	TECHNICAL FACTORS	
	CONSTRUCTION FEATURES	HAZARD CONCERNS
Eurobridge (64)	Suspension bridge of seven 5 km spans plus 6m diameter rail tunnel. Traffic lanes enclosed in a Superferrolo tube. The suspension cables 1.4m. dia. Parafil.	Suspension tower to withstand impact of a 250,000-ton ship. Oscillation of spans. Ventilation of traffic tube. Explosions on the bridge. Driver fatigue. Life of components.
Euroroute (64)	For road transport two bridges from each coast to artificial islands. Islands linked by tunnel on the seabed. Also, a rail tunnel on sea bed coast to coast.	Ventilation of the tunnels. Earth movement. Resistance of the 34 protective caissons to damage by shipping. Explosions in the tunnel. Life of components.
Channel Tunnel (64)	A 3-tunnel system, two railway and service tunnels. Terminals for loading and unloading road vehicles on and off trains.	Ventilation. Earth movements. Life of components. Explosions in the tunnels.

Assessment of the Efficacy of Ranking Table C: Summary of Main Channel Crossing Technical Factors of Interest		
PROPOSAL	TECHNICAL FACTORS	
	CONSTRUCTION FEATURES	HAZARD CONCERNS
ChanneL Expressway (64)	A twin tunnel system, each tunnel taking both road and rail traffic. Would be the largest drive through tunnel in the world.	Ventilation. Earth movement. Life of components. Driver fatigue.

The Risk Ranking Technique in Decision-making Table D: Summary of Main Channel Crossing Economic Factors of Interest					
PROPOSAL	PROPOSING GROUP	ESTIMATED COST	COMPLETION TIME	SUGGESTED TOLL	RETURN
Eurobridge	Laing, Brown & Root. ICI.	£5.9 bn.	5 years.	Comparable to sea ferries.	21-22% Pay back 6-11 years.
Euroroute	Trafalgar House, British Steel and Banks.	Motorway link £7.2 bn Rail link £3.5 bn.	5 years for bridge 8 years for tunnel.	Comparable to sea ferries.	17% gross complete pay back 15 years.
Channel Tunnel	3 U.K. and 2 French construction companies and 3 French banks.	Max, debt £4.75 bn allowing £1bn for contingencies.	7 years from Government announcing decision.	10% below existing ferry tariffs.	19% rate of return. Complete pay back 15 years.
Channel Expressway	British Ferries Ltd.	£2.5 bn including construction period interest.	5 years	Cars 50% cheaper and lorries the same as ferries	Return on equity 27%.

Assessment of the Efficacy of Ranking Table E: Summary of Channel Crossing Socio-Political Factors					
PROPOSAL	PUBLIC CONSULTATION	ADVANTAGES FOR PUBLIC	DISADVANTAGES FOR PUBLIC	ARGUMENT FOR	ARGUMENT AGAINST
Eurobridge	No public inquiry. Questions may be raised in Parliament. Simple poll showed 63% in favour of fixed link.	Reduces journey time. Greater efficiency should improve employment.	Economic adjustment in Dover and Calais areas. Loss of agricultural land for terminals.	Improve European employment.	High-cost technology uncertain.
Euroroute	As Eurobridge above	As Eurobridge above.	As Eurobridge above.	As Eurobridge above.	High cost, driver safety & ventilation.
Channel Tunnel	As Eurobridge above	As Eurobridge above.	As Eurobridge above.	Less risk of accident.	Road to rail change.
Channel Expressway	As Eurobridge above	Also has benefit of both road and rail.	As Eurobridge above.	As Eurobridge above.	Driver safety and ventilation.

The Risk Ranking Technique in Decision-making Table F: Channel Crossing Technical Factor Rank Score of Proposals		
PROPOSAL	TECHNICAL FACTOR CONCERNS	PR SCORE JUSTIFIED
Eurobridge	Limited data about life of Superferrolo and Parafil. No information about: oscillation of bridge, earth movements, adequacy of ventilation, driver fatigue, water lightness and resistance to explosions.	Considerable technical justification of new materials required. Proposed score 2.
Euroroute	Resistance to earth movements, ventilation driver fatigue, bridge oscillation, tunnel water tightness and resistance to explosions.	Considerable technical justification of design required. Proposed score 2.
Channel Tunnel	Earth movements, ventilation, water tightness, resistance to explosions and driver fatigue.	Some justification of design required. Proposed score 2.
Channel Expressway	Will tunnel be disturbed by earth movements, adequacy of ventilation, water Lightness, resistance to explosions and driver fatigue.	Some justification of design required. Proposed score 2.
No fixed Link	Revision of Ferry regulatory	Revision of requirements

The Risk Ranking Technique in Decision-making Table F: Channel Crossing Technical Factor Rank Score of Proposals		
PROPOSAL	TECHNICAL FACTOR CONCERNS	PR SCORE JUSTIFIED
Crossing	requirements	unlikely in the short term. Proposed score 3.

Assessment of the Efficacy of Ranking Table G: channel Crossing Economic Factor Rank Score of Proposals		
PROPOSAL	ECONOMIC FACTOR CONCERNS	SCORE JUSTIFIED
Eurobridge	£5.9 bn. no indication of possible variation.	No consideration of variation given. Proposed score 2.
Euroroute	£5.2 bn. Proposer suggested total cost may reach £10.7 bn (£7.2 bn for the rail link).	If variation in the range mentioned was realized the project would be unacceptable. Proposed score 3.
Channel Tunnel	Maximum debt the project would incur would be £4.75 bn allowing £1 bn for unforeseen contingencies.	This seems to include a reasonable allowance for contingencies. Proposed score 1.
Channel Expressway	£2.1 bn excluding interest during construction and £2.5 bn including construction period interest and fees. No discussion of variation.	Although this is the simplest scheme no allowance is made for cost variation. Proposed score 2.
No Fixed Link Crossing	No costs are given, but for a comparable service new ferries and terminals would be required.	No figures given. Proposed score 2.

Assessment of the Efficacy of Ranking Table H: Channel Crossing Socio-political Factor Rank Score of Proposals		
PROPOSAL	SOCIO-POLITICAL FACTOR CONCERNS	SCORE JUSTIFIED
Eurobridge	Changes in local environment and improvement in employment prospects. Risks to drivers on bridge.	No serious objection. Proposed score 1.
Euroroute	Changes in local environment and improvement in employment prospects. Adequacy of ventilation.	No serious objection. Proposed score 1.
Channel Tunnel	Changes in local environment and improvement in	No serious objection. Proposed score 1.

Assessment of the Efficacy of Ranking Table H: Channel Crossing Socio-political Factor Rank Score of Proposals		
PROPOSAL	SOCIO-POLITICAL FACTOR CONCERNS	SCORE JUSTIFIED
	employment prospects. Adequacy of ventilation.	
Channel Expressway	Changes in local environment and improvement in employment prospects. Adequacy of ventilation.	No serious objection. Proposed score 1.
	Inadequate transport service.	Until service improves some objection. Proposed score 2.

The Risk Ranking Technique in Decision-making Table I: Overall Ranking of the Acceptability of Channel Crossing Proposals		
PROPOSAL	TOTAL SCORE	RANK
Eurobridge	5	2
Euroroute	6	2
Channel Tunnel	4	3
Channel Expressway	5	2
No Fixed Link Option	7	1

The overall ranking of acceptability (lowest *score* better) is as shown in Table I.
The conclusion that appears to be justified from the overall ranking is that the channel tunnel proposal is the most acceptable and the no-fixed link option the least acceptable. Also, the channel tunnel proposal was shown to be subject to the least number of technical reservations.

Making it Work at Management Level

"Remember, if you take risks, you may still fail, but if you do not take risks, you will surely fail. The greatest risk of all is to do nothing." Roberto Goizeuta (Coca-Cola). To continue with Goizeuta's observations"

"Risk taking is a day-to-day thing. It is not something you can dictate. You cannot tell somebody 'now you are going to be creative'- you have to provide an atmosphere in which creativity can flourish . . . . You cannot tell somebody 'you're going to be action-orientated. I want ten proposals from you every week' rather . . . you have to encourage (risk taking, don't hit them over the head. Also, set goals for the person. Tell the person what you want, but don't tell the person how to achieve it."

Here are the rules Goizeuta recommends to other would-be corporate deal makers:

(1) Know Where You Are Going

The first step is to devise a simple, clear strategy.
"*Once the [action] starts it moves fast . . . . You have to know where you're going and what you want . . . . If you don't know where you are going, the last thing you will want to do is get there in a hurry."*

(2) Do Your Calculations

"*Back in 1982 we surprised many – even shocked a few – with our acquisitions of Columbia Pictures. You might say that was the formal announcement of the new spirit we adopted . . . . We saw an industry poised on the verge of tremendous opportunities for a company with the resources, skills and willingness to realize them . . . . We saw an industry which is not dependent on high technology or heavy capital investment for growth – two things we at Coca-Cola are not good at handling . . . . We saw an industry whose profits are largely U.S. based, a quality we like in order to help balance the large percentage of our earnings which come from overseas . . . .*"

(3) Invest the Time and Resources to Do It Right.

In Goizeuta's view, the pressures of risk taking require a special – usually separate – commitment of people and resources.

(4) Think Long-term: Think Strategically

Coke accepted a short-term drain on earnings to acquire Columbia because, explains Goizeuta:
"We were buying for the long term; the hub of a wheel that would generate profitable growth for the company as a whole."

(5) Recognize the Risk of Both Action and Inaction

For every risky situation, there are both risks of moving ahead and risks of doing nothing. Goizeuta advises:

"Measure one set of risks against the other. Both a decision to do nothing and a decision to take the most dramatic of actions should be based on the same deliberate study of the risks involved."
That is what Goizeuta did before granting the Coke name to his new diet cola in 1982. He saw bigger risk in doing nothing. Now, he boasts, his "risk" is the number one diet soft drink in the world, outselling its nearest competitor by a five-to-one margin.

(6) Allow No Room for Personal or Corporate Egos

To Goizeuta, this means having the guts to admit a mistake if a risk does not work. Then get on with the next risk.

(7) Do not Let the Status Quo Slow You Down

Coke's mood shift was late in coming.

"Our bias against debt made the leveraging of financial resources the hardest move of all. Once we overcame our reluctance, its value exceeded all our expectations."

(8) Risk Daily

"Make deal making an integral part of the daily operating life of your business. . . . It will have a rapid and dramatic effect on any organization."

The compound annual return on Coca-Cola stock was about one per cent during the 1970s. But Goizeuta's aggressive "risk daily" manifesto brought it to more than 20 per cent in the 1980s. When Goizeuta took over, Wall Street priced Coke's shares at less than two times book value. By mid-decade, those shares were selling at closer to four times book value as investors jumped aboard Coca-Cola's new risk-taking express.

(9) Coax, do not Bully, Others into Risking

Goizeuta manages his inventive troops with a loose grip, letting them set some of their own goals.

"If you can negotiate what you want it's a lot better . . . . for example, say I ask you for something, and ask when you can have it for me. And you say I can have it by December 14th, then you are meeting your own deadline. You tend to work harder at achieving that because you've set that deadline for yourself."

So much for theory – but who do you employ?

Is the right combination of risk-takers and risk-avoiders ever possible? Good management is always a function of optimizing opportunities. And opportunities often are perceived by the people you employ. Accordingly, there rarely is a comparative base for properly assessing management performance other than the traditional and perhaps hackneyed criteria of profitability, turnover and dividends.

To simply submit employees to various forms of psychoanalysis tests or assessment and label each "risk-taker" or "risk-avoider" of itself is of little utility. Certainly, it may be a criterion that is useful for management to know and understand with respect to individual employees. Nevertheless, as the studies have shown it is the combination of those personalities which produces the most effective results.

As well the studies have also shown that too much sophistication, too much information and too many statistics often permit executives to camouflage their decision-making process with "numbers".

Although it suffered some criticism, Peters and Waterman's, In Search of Excellence (1982) made some useful observations which are consistent with these principles:

"We will conclude with one strange contradiction that may really hold. We call it the smart-dumb rule. Many of today's managers – MBA trained and the like – may be a little bit too smart for their own good. The smart ones are the ones who shift direction all the time, based upon the latest output from the expected value equation. The ones who juggle hundred-variable models with facility; the ones who design complicated incentive systems; the ones who wire up matrix structures. The ones who have 200-page strategic plans and 500-page market requirement documents that are but step one in product development exercises.
'Our dumber' friends are different. They just don't understand why every product can't be of the highest quality. They just don't understand why every customer can't get personalized service, even in the potato chip business. They are personally affronted when a bottle of beer goes sour. They can't understand why a regular flow of new products isn't possible, or why a worker can't contribute a suggestion every couple of weeks. Simple minded fellows, really; simplistic even. Yes, simplistic has a negative connotation. For the people who lead the excellent companies are a bit simplistic. They are seemingly unjustified in what they believe the worker is capable of doing. They are seemingly unjustified in believing that service can be maintained at a high standard for virtually every worker can contribute suggestions regularly. It is simplistic. But it may be the true key to inducing astonishing contributions from tens of thousands of people." (Page 324)

Some Specifics within the Construction Industry

Perhaps almost by way of postscript, the principal heads of risk within the construction industry – or more specifically with respect to construction projects – are generally agreed amongst the various authors. They include:

- the construction risk – time budget and costs, including managing the on-site risks such as weather and ground conditions;
- site infrastructure;
- market risk;
- political risk;
- operating risk;
- foreign currency risk;
- insolvency risk;
- force majeure; and
- the end market for the particular project i.e. future customers and for transport projects, patronage.

Risk analysis and allocation commercial transactions – some guidelines

Because every aspect of the construction industry is fraught with risk, we can in many of these issues take some lead from the techniques and processes that employers and major contractors employ to identify; price and then manage risks.
It is almost mandatory in the tender department of any major contractor that some form or risk-assessment template – a document that is completed and analyzed for each tender – is used for the proposed project.

Surprisingly however, it is quite uncommon for these types of documents to be used in many major commercial transactions – as a matter of course. More consistently, we see detailed business analysis via most commonly a form of spreadsheet that sets out a pro-forma balance sheet and seeks to examine the potential acquisition by reference to particular accounting components.
Certainly, none of that effort is wasted – but is it not time *also* for those in commerce and business to also look more carefully as a broader range of transaction risk issues and to seek to identify events that might occur with adverse consequences?

To illustrate these issues, ***attached*** is a typical risk work sheet that you would find in the tender department of a major contractor. Its primary purpose is to draw out from the tender documents and the proposed business drivers for the project, what are the key criteria or risk/commercial issues that management needs to review to formulate a bid.
The sample document is intentionally quite brief, but it highlights a degree of thoroughness that many in the non-building sector might like to consider implementing.
Of course, every business and every industry sector have their own unique features and approach to risk assessment and management. But be that as it may, it is surprising how many major transactions that commercial lawyers are asked to document, that have no risk- analysis framework around them, to give the lawyer and contract drafter an understanding of the approach that his client wants to take in the particular deal and most importantly, the risks to be avoided; that haven't been priced; that are to be allocated to others or in some cases, are to be covered by insurances.

Summary

In all major investment decisions and transactions, more than ever, today success is all about good risk management.
Risk management takes many forms and involves a variety of personal and business and indeed cultural issues.
It is not something that will conveniently be the product of a spreadsheet or be capable of being reduced to a ratio or %.

Being successful in business means being astute to psychological leanings of your team – and knowing how to exploit them both individually and as a team.
Once that is done, documenting all of this requires sharing your thoughts and analyses with your transaction lawyer and working with your legal team to get the documentation to reflect the risk profile you decide upon.

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September, 2023
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Attachment: Typical major contractor risk analysis benchmarking template (for bidding).

Contractual Benchmarks - Design and Construct Contract

Ref #	ISSUE	CONTRACTUAL BENCHMARKS	AUTHORITY TO RECOMMEND DEPARTURE	COMMENTARY
			Holdings: **CEO**: Chief Executive Officer **ED**: Executive Director **SD**: State Director **CM**: Commercial Manager (Bldg) **CSM**: Commercial Services Manager (Civil)	Note generally that where Contractor assumes responsibility for risks, they are to be fully understood, reviewed, priced, qualified or mitigated.
1.	**GENERAL**			
1.1	**COBT Required**	A COBT must be prepared in accordance with Holdings policy	Holdings	
1.2	**Legal Review**	A legal review of the major risks associated with the actual terms (or where it is proposed to qualify or modify some or all of those terms, the expected terms) of contract must be prepared for all contracts before execution.	CM/CSM (with Group Legal)	The legal review may be done internally or externally but must be an unbiased independent review of the major risks associated with the conditions of contract. SD may elect not to carry out the full legal review prior to submission of tender but it must be carried out before Contractor is bound to any commitment. If the review highlights a risk, the review should make reference to the mitigant or circumstances that allow the Business Unit to assume that risk.
1.3	**Client Credit Check**	Group Treasury must undertake a credit check for all non-Government Clients.	Group Treasury	
1.4	**Negative Credit Check**	If Group Treasury provides a negative credit check, Contractor cannot enter into the transaction with the Client.	ED (with Group Treasury)	
1.5	**Contract Documentation**	All obligations, risk, benefits or entitlements are to be expressed in a written, self-contained, contract document. The contract must be executed as an "Agreement'	CM/CSM (with Group Legal) ED (with Group Legal)	Incorporation of obligations, risk, benefits or entitlements by reference to other parties' obligations, risk, benefits or entitlements under other contracts are to be: ➢ fully understood, reviewed

Ref #	ISSUE	CONTRACTUAL BENCHMARKS	AUTHORITY TO RECOMMEND DEPARTURE	COMMENTARY
		or "Contract" as opposed to a "Deed".		and priced; ➢ subject to effective management by Contractor (not the other party to Contractor's contract); ➢ identified in commercial review; and ➢ within Contractor's accepted contractual risk parameters. Contractor is to be particularly wary of contracts incorporating sales contacts (see detailed comments under Completion below). Contractor should attempt to negotiate contracts or agreements rather than deeds, which have longer limitation of liability for breach periods (12 years v. 6 years). Where a client uses standard terms (such the Roads and Traffic Authority), after an initial review the contract need only be reviewed for changes, if any, to those standard terms.
1.6	**Early Works**	Early works are only to be undertaken where supported by a binding agreement, or by letter of indemnity following a legal review.	SD/CSM (with Group Legal)	Note that suitable insurance is to be in place. Agreement and/or indemnity to be provided by a credit approved party.
1.7	**Statutory Authorities**	Where the Client is a statutory authority and is entitled to exercise its statutory powers, an acknowledgement is to be incorporated in the contract that such action does not relieve the statutory authority from breach of its obligations under its contract with Contractor or from Contractor's entitlement to claim variations, EOTs etc under the contract. Likely requirements of the statutory authority are to be assessed for	CM/CSM (with Group Legal)	

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		inconsistency with the contract.		
2.	**CONTRACT MONEYS**			
2.1	**Cashflow**	At a minimum, Contractor is to be paid in full the value of work completed on monthly payment cycles. Payment terms must be such that payment for work must not be more than 2 months after the item of work is carried out by Contractor. Where payment to Contractor is late interest must accrue at an appropriate rate, which must be more than Contractor's cost of funds. Any ability by the Client to set-off moneys owing to Contractor must be limited to amounts owing under the contract. The ability to set off is to be mutual.	SD/CSM	Contractor should be wary of additional Client requirements in relation to payment of the contract sum, in particular: ➢ conditions precedent to progress payments such as the satisfaction of a cost to complete test or the payment of progress payments into a trust account; and ➢ caps on monthly progress claims, are not to be accepted. An appropriate rate of interest for late payments to Contractor should: ➢ not be less than BBSY + 2%; and ➢ be greater than the Client's cost of funds, Projects tendered incorporating a cash negative position (e.g. as may arise with a Milestone Payment provision) require approval of Treasury, and may require COBT approval. but any queries should be referred to Group Treasury. Sub-contract payments by Contractor to subcontractors must have at least, a 7 day longer time period for payment than under Contractor's contract with the Client. Contractor should be wary of allowing the Client the right to set off amounts claimed by the Client, or amounts that may become owing by Contractor to the Client, rather than amounts that are actually owing under the contract.

Contractual Benchmarks - Design and Construct Contract

Ref #	ISSUE	CONTRACTUAL BENCHMARKS	AUTHORITY TO RECOMMEND DEPARTURE	COMMENTARY
2.2	**Strategic Procurement and Associated Share of savings**	Contractor must not contract on terms that prohibit Contractor retaining for itself supplier rebates or discounts for trade rates, volume, length of term or early payment. Contract management and cost plus arrangements are to be first discussed with Strategic Procurement. Contract conditions requiring disclosure of actual cost to Contractor are to be first discussed with Strategic Procurement.	CM/CSM CM/CSM (with Group Legal) CM/CSM (with Group Legal)	Contractor must be particularly wary of entering into share of savings regimes with the Client calculated by reference to early payment discounts which do not take into account the net cost to Contractor of funding the early payment pursuant to which the discount is achieved.
2.3	**Foreign Exchange Risk**	Contractor **<u>may not</u>** take uncovered foreign exchange risk.	ED (with Group Treasury)	In particular Contractor should be wary of taking foreign exchange risk on imported plant and materials. Effective cover by a creditworthy subcontractor is acceptable. No contract should be entered into with payment in a foreign currency.
2.4	**Security**	Contractor may only offer security by way of unconditional undertakings, not by way of retention. Contractor may not provide unconditional undertakings in excess of 10% of the contract sum, reducing to not more than 2.5% for the defect liability period without prior approval from Treasury. The terms of the contract must allow Contractor to: ➢ satisfy its security obligations by providing insurance ("non-bank") bonds; ➢ provide unconditional undertakings in the standard terms approved by Treasury; ➢ state that the purpose for unconditional undertakings is to	ED (with Group Treasury)	Whilst a 12 month time limit is Group Policy, it should be noted that some standard contracts (particularly for Government clients) stipulate periods of 24 months.

Ref #	ISSUE	CONTRACTUAL BENCHMARKS	AUTHORITY TO RECOMMEND DEPARTURE	COMMENTARY
		provide security for performance of Contractor's obligations under the contract; ➢ not allow the Client to convert unconditional undertakings to cash for any reason at its discretion; and ➢ not require Contractor to replace any unconditional undertaking that the Client cashes. The Client must not be entitled to hold the unconditional undertakings; ➢ longer than 12 months after practical completion; or ➢ after termination of the contract. Group Treasury must be consulted if the underlying obligation secured by the unconditional undertaking is forecast to have a term of longer than 3 years. There must be no obligation on Contractor relating to credit rating of the issuer of the unconditional undertaking.		
3.	**SITE**			
3.1	**Access**	Access must be: ➢ given to Contractor to all areas where the physical works are to be undertaken; and ➢ be certain and such as will enable Contractor to perform its obligations under the contract (including to adjacent properties where required). Where Contractor requires access to the site, or parts of the site, by particular dates, or in a particular	SD/CSM	Where the contract foreshadows that the Client will introduce other contractors on site: ➢ the other contractors' access entitlements are to be fully understood, reviewed and allowed for; ➢ Contractor's access entitlements should take precedence over any other parties access entitlements; and ➢ any cooperation and coordination requirements

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		sequence, those requirements are to be an express contractual obligation of the Client.		must be reciprocal. Where Contractor requires access to adjacent property to perform its obligations, access arrangements are to be: ➢ fully understood, reviewed and priced; and ➢ an obligation of the Client, or set out in an agreement between Contractor and the relevant owner.
3.2	**Risk of Site**	Contractor may only assume responsibility for risk associated with the existing site conditions, including: ➢ Contamination (see below); ➢ latent conditions, including geotechnical conditions and subsurface conditions; ➢ existing structures; ➢ historical artefacts; ➢ native title claims; ➢ to obtain and pay for any services; and ➢ protect, relocate, modify and provide for all services, that are needed to perform Contractor's scope of work, to the extent the risks are fully understood, reviewed, priced, qualified, mitigated or limited.	SD/CSM	Where Contractor releases the Client from liability for information relating to the condition, or suitability, of the site, it must be separately evaluated / validated by Contractor or its consultants. **Adequate due diligence related to the risks** include consideration of: ➢ location, condition and availability of services; ➢ extent of services to be relocated; and ➢ relevant authority agreement to and conditions relating to the affected service relocation (including headworks contributions fees or charges) and expansion of services on or off site (including up-grades). Contractor should ask the Client to provide a copy of any information it possesses in relation to the site. Client provided insurance for existing structures should include Contractor as a named insured. Note that insurance does not cover inevitable damage (ie from unsound structures). It will only cover damage that is unexpected or accidental.
3.3	**Contamination**	Contractor may only assume the risk of contamination in, under or around the site to the	SD/CSM	Contractor must be careful not to inadvertently assume the risk for any requirement to dispose of or deal with any

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		extent: ➢ identified in Contractor's scope of work; ➢ that it is disturbed by the carrying out of Contractor's work; or ➢ that it arises out of or in connection with Contractor's work. Contractor may assume the obligation to: ➢ dispose of or deal with such contamination; ➢ remediate the site to the extent it is degraded by any such contamination; and ➢ indemnify the Client from and against any claim associated with such contamination. Contractor must not assume liability for claims by 3rd parties which do not relate to or arise out of the work undertaken by Contractor.		contamination which: ➢ existed at the date on which access to the relevant part of the site is given to Contractor and is not part of Contractor's scope of work; or ➢ is beyond the boundaries of the site.
4.	**WORKS**			
4.1	**Buildability/ Competency**	Contractor may assume: ➢ obligations that are within its proven capacity and expertise to perform; ➢ risks that are understood, identified and within its capacity to manage. Contractor may not assume the risk of emerging technology or "prototype" developments.	ED	
4.2	**Process Design Risk**	Contractor **may not** assume any "process risk".	CEO (with Holdings)	For example Contractor may not take process risk by warranting the out-put for an industrial production line, or for a mining process.
4.3	**Information Documents**	Contractor may: ➢ warrant that it has not	CM/CSM	Where the Client has supplied information that Contractor

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		relied on Client supplied information; and ➢ provide an indemnity to the Client against any claims by Contractor in respect of such information, to the extent it has carried out adequate due diligence relating to the underlying risks with which the information is concerned.		cannot rely upon, it should: ➢ be identified in commercial review; ➢ not be relied upon except to the extent it has been inadequately evaluated / validated by Contractor or its consultants; and ➢ not be able to be relied upon by the Client for determining whether Contractor has met its fit for purpose obligations. The Client should confirm that it has supplied to Contractor all relevant information in its possession relating to the contract. Note that there may be provisions absolving the Client of responsibility for information in a Deed of Disclaimer issued by the Client prior to and as a condition of being provided with Tender documents.
4.4	**Specification/ Brief**	N/A	N/A	The type of Specification/Brief is to be identified in the Contract Review Checklist.
4.5	**Design and Prior Work**	Contractor may accept responsibility for prior design work carried out by third parties, subject to: ➢ Contractor having contractual rights against the designer; and ➢ the designer having adequate insurance to cover the perceived risk; or ➢ pass through of Contractor's risk to Contractor's design consultant; and ➢ adequate evaluation by Contractor's design consultant. Contractor may accept design responsibility for temporary or permanent	SD/CSM	Essentially design risk should not rest with Contractor: it either remains with the Client or is off-laid to the Contractor's design consultant (in which case the consultant's liability is to be adequately supported by insurance. Any limit of liability should be at least equal to the level of insurance cover required by the Contract. Due diligence may identify the need for direct contractual rights against the Client or the third party who performed the prior works. Contractor may have contractual rights against a designer by, for example, being

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		works only to the extent that it is to be carried out by professional 3rd party consultants.		novated to the contract between the Client and the designer or by entering into a direct independent agreement with the designer.
4.6	**Technology Upgrades**	Contractor **may not accept liability:** ➢ to upgrade the works to incorporate advancements in technology after the date of the contract; or ➢ undertake any capital improvement works or modification or upgrade works to make the works remain fit for their intended purposes at all relevant times after Completion (because the concept of what is fit for purpose changes), except to the extent it is recompensed for such additional work.	ED	
4.7	**Design Implementation**	Where Contractor is responsible for design: ➢ Contractor must be able to proceed with construction in accordance with such design that is in accordance with the contract; or ➢ if Client approval of the design is required before construction may proceed, in the absence of approval within a prescribed time, Contractor must be: i) entitled to proceed at its risk; or ii) entitled to time and cost relief from the Client.	SD/CSM	
4.8	**Development Approval**	Contractor **may not** assume liability to obtain Development Approval, or	SD/CSM	Adequate due diligence related to the risks assumed is to be carried out including a technical

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		liability to comply with unknown conditions of a Development Approval.		and legal review.
4.9	**Consents and Approvals**	Contractor must not assume responsibility to obtain other consents and approvals required for Contractor's scope of work unless adequate due diligence related to the risks assumed is carried out including a technical and legal review.	CM/CSM	
4.10	**Variations**	Variations must be expressly defined in the contract by reference to a change to the works to be designed and constructed by Contractor (including temporary works). Any pre-conditions to payment should be consistent with obligations to carry out variation work – e.g. if payment is conditioned upon the variation being in writing, then there should be no obligation to perform a variation that is not in writing.	CM/CSM	Contractor must be careful not to agree to conditions that limit recovery for: ➢ temporary works; or ➢ variations to only the direct cost of the variation
4.11	**Errors, Ambiguities and Inconsistencies**	**Contractor must not agree** to provisions relating to errors, ambiguities and inconsistencies that allow the Client to avoid liability for variations.	CM/CSM	Where the Client retains design/documentation liability, errors and omissions should be treated as a variation. To overcome inconsistencies in the documentation, the contract should include an order of precedence for the documents constituting the contract.
4.12	**Subcontractors**	Nominated subcontractors must be known before Contractor executes the contract, unless Contractor has the ability to reject subcontractors nominated by the Client after the date of the contract.	CM/CSM	If subcontractors are nominated after the bid, the bid must be reviewed particularly to ensure the bid price is adequate, and the suitability of the subcontractors. In conducting that review particular attention should be

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		The Client must not have the right to reject Contractor's subcontractors. Where subcontractors are to be novated to Contractor: ➢ the prior work by the subcontractor is to be assessed for compliance with Contractor's contracted obligations; and ➢ the novated agreement is to be reviewed to ensure consistency with Contractor's contract with the Client.		paid to the credit worthiness of the subcontractor.
4.13	**Completion**	The fact of Completion must be objectively determined or assessed, not subject to the opinion of the certifier, whether an independent party, the Client, or its agents. It must not be a test of, or a condition precedent to, Completion that the works are "defect free". It must be within Contractor's control to meet any conditions precedent to Completion, (for example not dependent upon the Client meeting certain requirements). Where a third party is responsible for determining whether Completion has been achieved: ➢ the Client must be responsible to Contractor; or ➢ Contractor must have recourse to the third party; for any failure to perform that obligation.	SD/CSM	Where it is a condition of Completion that Contractor meets the requirements of any sales contracts or agreement to lease, the requirements of those sales contracts are to be specified at the date the contract between Contractor and the Client is signed. The proforma sales contract should be annexed to and form part of the contract. Any amendment to the sales contract (for example where the Client's sales team agrees to an amendment to the standard of finishes to secure a sale) is to be a variation under the contract. Contractor should not accept an obligation to ensure consultants certify that work is constructed: - in accordance with their design; or - in accordance with the contract, unless the relevant consultant agrees or has been engaged on such terms.

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		Contractor must not be required to provide a final claim or release as a condition precedent to Completion.		
4.14	**Change in Law**	**Contractor must be paid, and allowed an EOT, for the effect any change in law** has upon the execution of the works, including the effect upon the capital cost of the work and the manner of execution of the work (including temporary works). Change in law must be defined in the contract document.	SD/CSM	The definition of change in law should include, at least, changes in legislation, regulations, and the interpretation/application of the common law. Contractor should also try to extend the definition to changes in approvals where possible.
5.	**WARRANTIES**			
5.1	**Defects and Defects Liability**	Defects must be related to the physical works being delivered by Contractor to the Client. Defects must not relate to temporary works or to any failure to complete the work by a prescribed time. A defects liability period must not be longer than 12 months from the date of Completion, with no more than one 12 month refresher period for any work the subject of defect rectification. Contractor must only accept liability to rectify 'actual defects' in the works at its cost. Contractor must not agree to rectify 'claimed defects' at its cost, and then be obliged to seek to recover the cost of doing so from the Client when it is determined that the work was not defective. Whilst the Client may deduct from moneys payable to Contractor the cost to Contractor of	CM/CSM	

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		rectification of a defect, the Client must not be able to deduct the reasonable cost of rectifying a defect without first providing Contractor the opportunity to rectify the defect.		
5.2	**Fit for Purpose**	Where there is a fit for purpose or intended use obligation in the contract, the purpose or intended use must be stated in or ascertainable (as at the date of the contract) from the contract documents. Intended use or intended purpose obligations are to be incorporated into all relevant design subcontracts	SD/CSM	Particular attention should be paid in the Legal Review to fit for purpose or intended use obligations.
5.3	**Warranties and Collateral Warranties**	Contractor can provide warranties relating to the works, but Contractor must be relieved from any adverse consequences arising from:- ➢ a variation directed by the Client; ➢ failure by the Client to maintain in accordance with good practice; ➢ fair wear and tear, improper use or modification by others; or ➢ any other cause for which Contractor is not responsible under the contract. Contractor must not provide manufacturers warranties in its own name.	CM/CSM	Particular attention should be paid to fit for purpose or intended use obligations, and to design life warranties. Contractor may accept liability to reinstate, repair or rectify (but not replace). In the case of a collateral warranty, any assignment by the Client may only be made to the same entity to which the Client assigns its rights and obligations under the contract (ie no dual liability). Warranties: ➢ are to be carefully considered – professional indemnity insurance will not respond in relation to warranties, particularly where related to performance criteria; and ➢ are to be supported by back to back agreements with subcontractors, suppliers or consultants.
6.	**CARE OF THE WORKS/INSURANCE**			
6.1	**Insurance**	Where the Client effects insurance for:	CM/CSM (with Group Risk)	The contract should provide that: ➢ the party that causes an

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		➢ a contract works policy of insurance; ➢ third party liability insurance; ➢ professional indemnity insurance, such insurance shall be: ➢ confirmed acceptable by Contractor insurance advisor (internal or external) as to terms, exclusions, excess and extent of cover prior to commencement of work; and ➢ maintained by the Client until: - completion of work (including defects rectification for contract works and third party); - expiry of limitation of liability period for professional indemnity insurance. Where the contract provides that insurance moneys are to be payable to the Client, any obligation on Contractor to reinstate the works must be dependent on Contractor first receiving those insurance moneys.		event the subject of an insurance claim should be responsible for paying the excess; and ➢ excesses are to be apportioned where more than 1 party is involved. All parties should be named in insurance documents so that each has cover in its own right. Any requirements for insurers to provide notices are to be confirmed as being acceptable by Contractor insurance advisor (internal or external). DIC cover is required where the Client's insurance does not meet Contractor's requirements.
6.2	**Insurance Details**	N/A	N/A	Insurance details are to be identified in the Contract Review Checklist.
6.3	**Care of the Works**	**Contractor may accept the risk** of loss or damage to the permanent and temporary works until: ➢ Completion; or ➢ occupation by the Client whichever is the earlier. Contractor may accept the obligation to make good any loss or damage to the works, except where the	CM/CSM (with Group Risk)	Note that in appropriate circumstances Contractor could consider accepting the obligation to make good any loss or damage to the works caused by the negligent act or omission of the Client if the Client expressly agrees to reimburse Contractor for its costs and expenses.

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		loss is caused by: ➢ negligent act or omission of the Client (or his servants, agents, consultants or invitees); ➢ an (un-insurable) event not covered by Contractor's or the Client's insurance policies.		
6.4	**Third Party Claims**	Contractor must not be liable for third party claims which are the necessary consequence of doing the work required by the contract.	CM/CSM	Contractor must not be liable for third party claims such as any liability the Client has from the 'works' required by the contract to be executed, as opposed to claims arising from the manner of execution of the works.
7.	**TIME**			
7.1	**Bonus for Early Completion**	N/A	CM/CSM	Date for assessment of bonus should be extended by the same amount as the date for completion.
7.2	**Programme**	**Contractor must not accept liability** to proceed strictly (as opposed to generally) in accordance with an approved program where failure to do so would result in a breach of contract and a liability for damages. In circumstances where the Client suspends the works, other than as necessary due to a breach by Contractor, Contractor must be entitled to time and cost.	CM/CSM	
7.3	**Grounds for Extensions of Time**	Contractor must be entitled to an extension of time for delay in reaching Completion caused by: 1. act or omission of the Client (including breach) or its agents and consultants; 2. change in law (to be defined); 3. variations (to be defined),	CM/CSM	Note that an early occupation of the works by the Client should entitle Contractor to time and cost relief.

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		4. legal challenge not relating to a breach by Contractor (including native title applications) 5. force majeure (to be defined); 6. separate contractors 7. requirements of authorities 8. metropolitan area wide industrial action not caused by Contractor 9. inclement weather except to the extent for which allowances for 5, 6, 7, 8, and 9 are included in the contract (time and cost).		
7.4	**Causes of Delay**	N/A	N/A	The causes of delay entitling an EOT are to be identified in the Contract Review Checklist.
7.5	**Payment for Extensions of Time**	**<u>Contractor must be entitled to delay costs</u>** caused by: ➢ act or omission of the Client (including breach) or its agents and consultants; ➢ change in law (to be defined); ➢ variations (to be defined), ➢ legal challenge not relating to a breach by Contractor (including native title applications). Contractor must either: ➢ not pre-agree the rate for delay damages (Contractor must retain its ability to claim its actual cost when it is entitled to delay damages); or ➢ ensure that if it does pre-agree the rate for delay damages, the rate is sufficient to cover all delay damages that Contractor will incur in the event of a delay	CM/CSM	

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		(including for likely subcontractor damages). There must be no cap on the delay damages to which Contractor is entitled.		
7.6	**Calculation of Extensions of Time**	Contractor must retain the benefit of any float created or contained within the programme from time to time. As such a delay must be calculated by reference to a delay in achieving Completion, not to a delay in achieving Completion by the date for Completion. The entitlement to the EOT must: ➢ be calculated by reference to the actual delay, not by reference to the (approved) program; ➢ not be diminished by a concurrent delay which would not otherwise entitle Contractor to an EOT; ➢ not be subject to conditions precedent (other than to lodge a claim within a prescribed time). For example, where Contractor's entitlement to an EOT is dependent upon mitigation of the effect of the delay, Contractor's entitlement may only be reduced to the extent of any failure to mitigate, not precluded by a failure to mitigate; and ➢ not be subject to Contractor at its own expense committing extra resources or incurring extra expenditure to make up lost time.	CM/CSM	

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		Contractor can accept a liability to accelerate at the Client's direction, only to the extent it is practical and reasonable to so accelerate, in circumstances where Contractor retains its float, and the Client meets the extra over cost of doing so.		
7.7	**Acceleration**	A client may order acceleration provided Contractor is entitled to payment. Contractor should not accept the obligation to accelerate upon direction if there are provisions that make payment for acceleration dependent on achieving a nominated accelerated date for completion.	CM / CSM	Contractor and its client may agree an accelerated date for completion for agreed consideration.
8.	**DAMAGES AND LIMITS OF LIABILITY**			
8.1	**Damages and Liquidated Damages**	Contractor must limit its liability for late completion by agreeing a rate for liquidated damages for delay which are to be capped at not more than: ➢ 10% of the contract sum; or ➢ 12 months delay; ➢ $10M; ➢ a daily rate of 0.03% of the contract sum (not to exceed *[$75,000*] per day) whichever represents the lesser exposure for Contractor. Liquidated damages for delay should be the Clients sole remedy for delay	ED	Contractor should resist paying LDs for failure to achieve milestones in circumstances where no demonstrable damages will be suffered by the Client. If LDs are to be paid by Contractor for failure to meet milestones, the milestone dates must be extended on the same basis as the date for Completion of the works.
8.2	**Consequential Damages**	**Contractor must exclude liability for consequential loss and damage** suffered by the Client.	ED	Contractor should be careful to ensure that any Contractor subcontract must not exclude or limit liability for consequential loss and damage for breach by the subcontractor

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				unless it is similarly excluded from or limited by Contractor's head contract. Any limits on liability may have an adverse effect on Contractor's insurance and must be reviewed with Group Risk.
8.3	**General Damages**	Contractor must cap its overall liability for breach of contract to the Client to not more than 100% of the contract sum.	ED	
9.	**INDEMNITIES**			

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9.1	**Indemnities**	Contractor may only indemnify the Client: ➢ for damages: – for breach of contract or law; or – for negligent act or omission by Contractor. ➢ In respect of it's liability to third parties under agreements between the Client and third parties to the extent that the relevant agreement has been disclosed to Contractor. ➢ to the extent caused by Contractor, liability for damage to 3rd party persons or property. Any indemnity should be to the extent only of Contractor's contribution, ie it should be reduced to the extent of any contribution by the Client. The Client: – should also be obliged to mitigate any loss it suffers; and – must not settle or consent to judgement or make admission in respect of a 3rd party claim without prior written consent of Contractor, not to be unreasonably withheld.	ED (with Group Risk and Group Legal)	Contractor should not indemnify any party. Any loss or damage the Client suffers should be recovered from Contractor by a claim for breach of contract. Any indemnity going beyond damages for breach of contract may prejudice Contractor insurance polices and must be referred to Group Risk. Where Contractor is obliged to give an indemnity in favour of the Client, the obligation should be mutual so that the Client gives a like indemnity to Contractor. Where the Client provides design documentation, the Client should indemnify Contractor for any claims by third parties for breach of intellectual property rights. It can be argued that the client should accept the requirement for Contractor consent, to avoid Contractor being able to claim that the settlement exceeds Contractor legal liability for damages.
10.	**ADMINISTRATION**			

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10.1	**Time Bars**	Contractor may accept time bars on its entitlements to claim which prescribe notices or claim by Contractor: ➢ within a reasonable period from when Contractor first becomes aware; and/or ➢ a reasonable period from when Contractor ought to have become aware of the event giving rise to the claim or entitlement. Contractor must not accept time bars which relate to when the event giving rise to the claim or entitlement occurs irrespective of knowledge of the event by Contractor. This is particularly so when the claim or entitlement relates to a breach of contract by the Client.	CM/CSM	It is suggested that a reasonable period of time within which Contractor must notify the Client is 14 days. It is suggested that a time bar should be expressed not to operate in circumstances where the underlying claim by Contractor is triggered by a Client breach of contract. Contractor cannot be expected to notify or claim where it is not aware or ought not to have been aware of the event or circumstance. This is particularly so in relation to time bars on claims for EOTs for breaches by the Client.
10.2	**Final Claim Releases**	Any release that Contractor gives as part of its final claim must not operate to prevent Contractor from bringing those claims the subject of the release as counter claims or defences to a claim brought later by the Client.	CM/CSM	Care should be taken to ensure that any release does not have the effect of releasing claims which have already been notified in the contract.
10.3	**Superintendent / Independent Verifier**	A determination/assessment of Contractor's entitlements under the contract to any measure of time or value (EOTs, Completion etc) must be undertaken by ➢ the Client; or ➢ a party for whom the Client is responsible to ensure arrives at reasonable measure of time or value (such as a traditional	CM/CSM (with Group Risk and Group Legal)	The Contractor preferred position is for the Client to determine fairly and reasonably Contractor's entitlements under the contract to any measure of time or value (EOTs, Completion etc). However in certain circumstances, Contractor can accept an independent verifier making determinations /assessments of time, quality, Completion or value in accordance with the contract if: ➢ any

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		superintendent).		determination/assessment by the independent verifier is able to be disputed; ➢ Contractor is party to the agreement by which the independent verifier is appointed; ➢ the independent verifier is liable to Contractor for failure to perform its contracted obligations An independent verifier: ➢ is to be an acceptable entity; ➢ scope of work is to be identified in commercial review; ➢ terms of engagement are to be reviewed for consistency with Contractor's contract; and is not to have a limit of the independent liability of less than $10M.
10.4	**Industrial Relations**	Contractor must retain responsibility for its industrial relations. Contractor must not be exposed to 'time' risk for industrial relations issues not site or Contractor related Group Industrial Relations Policy must be adhered to.	SD/CSM	Contractor should be particularly wary of obligations to comply with codes of conduct, Client employee guidelines and the like. Where the Client has the right to introduce other contractors on site they should comply with Contractor's site safety and induction procedures and the like.
10.5	**Intellectual Property and Moral Rights**	Contractor may only agree to assign to the Client title to, copyright in, or a right to use design documentation to the extent it owns it or is able to acquire it from its design consultants. Contractor may otherwise agree that it will use its best endeavours to procure for the Client an irrevocable license to use such rights for the purposes of the project. <u>Existing Structures</u>	CM/CSM	

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		The Client should warrant that it has obtained the moral rights consents from people who have moral rights in relation to existing buildings, or have followed the procedures to give notice prescibed in the [Copyright Act]. The Client should indemnify Contractor and its subcontractors in relation to claims for any such moral rights infringements. Contractor may only accept the risk of complying with the notification provisions contained within the [*Copyright Act]* in respect of existing structures (subject to adequate provision being made for program time and cost), but must not otherwise take the risk of failure to obtain moral rights consent. <u>New Structures</u> Contractor may only agree to obtain moral rights consent in respect of contract works to the extent it is able to obtain them from the owner (consultant and its employees).		
10.6	**Termination**	Contractor may accept the following events of default: ➢ failing to commence or to expeditiously and diligently progress Contractor's work; ➢ default in the performance of any of its other <u>material</u> obligations (Contractor should be wary to not agree to a breach of any of its obligations as trivial breach may lead to termination); ➢ an event of insolvency	SD/CSM	Contractor should not agree to: ➢ a "look forward" event of default, such as an expected failure by Contractor to achieve Completion by the date for Completion, whether in the opinion of the Client or an independent person, or any other party; or ➢ failing to achieve Completion by a fixed 'sunset date' (not subject to an extension of time).

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		occurs whether or not Contractor is then in breach; and ➢ breach of representation or warranty that has a material adverse effect on the ability of Contractor to carry out the works. Contractor must have notice of an event of default and a reasonable cure period (except for insolvency) before the Client is entitled to exercise termination rights. Contractor must have express suspension / termination rights for, at least, the following events: ➢ default by the Client in the performance of material obligations, other than where caused by Contractor; ➢ an event of insolvency occurs in relation to the Client; and ➢ the Client fails to make payment due under the contract. The Client may have notice of an event of default and a reasonable cure period (which should not be more than 1 week for payment), (except for insolvency) before Contractor becomes entitled to exercise suspension / termination rights		
10.7	**Applicable Law**	The contract must be governed by the laws of the state or territory within *[country/state]* where the work is carried out.	CM/CSM (with Group Legal)	Related agreements within the same transaction should all be governed by the same applicable law.
10.8	**GST**	The contract must expressly state whether payments are to be inclusive of or plus	CM/CSM	

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		GST.		
10.9	**Dispute Resolution**	Contractor may accept dispute resolution by: ➢ negotiation (with or without mediation); ➢ dispute review board / expert determination, subject to: i) agreement of the expert, or appointment by appropriate independent party; and ii) subject to entitlement to dispute any determination more than $[*250,000*]; and/or ➢ litigation, subject to the stipulated jurisdiction being [*home country*]. ➢ Any other dispute resolution process is to be referred to Group Legal. Contractor may not accept dispute resolution by arbitration.	CM/CSM (with Group Legal)	Some standard form contracts provide for an election for either litigation or arbitration. In these cases, reference to arbitration should be deleted.
10.10	**Parent Company Guarantee**	Any parent company guarantee is to be in Group approved standard form.	Group Treasury (with Group Legal)	
10.11	**Power of Attorney**	Contractor should not grant a power of attorney to any third party to execute documents or contracts that are binding on Contractor. Where granting a power of attorney is unavoidable, Contractor must first be given a period of not less than 7 days to execute such documents itself and the P.O.A. must only relate to exercise of rights and discharge of obligations which arise under the contract under review.	CM/CSM (with Group Legal)	

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10.12	**Corporate Branding**	Contractor must not contract on terms that prohibit Contractor from displaying its corporate colours and usual signage on any plant/equipment used in construction of the works. Contractor must be entitled to display signage on its construction sites which may be subject to the reasonable approval of the client.	SD/CSM SD/CSM	
10.13	**Assignment and Novation**	The Client must not be entitled to assign or novate rights and obligations under the contract to a third party without Contractor's consent not to be unreasonably withheld.	SD/CSM	
10.14	**Provisional Sums and PC Sums**	Provisional Sum and PC Sum work must be properly described. If Contractor is exposed to possible time risk according to how or when a direction to expend monies against either is given, then Contractor must be entitled to an extension of time with costs.	SD/CSM	
10.15	**Electronic Document Transmission**	Any notice of dispute, show cause or termination notice must be served by hand or by registered mail. All other notices required under the contract may be issued and transmitted electronically and with the original hard copy served by hand, facsimile or by mail (either of which are deemed to be validly given). Other general communications may be transmitted electronically subject to delegation of authority procedures and incorporation into the project document control system.	CM/CSM	